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<110> E. I. du Pont de Nemours and Company

<120> Genes Encoding Sulfate Assimilation Proteins

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<151> July 14, 1998

<160> 8

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<213> Oryza sativa

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 Ala Ser Glu Val Lys Arg Ser Lys Val Glu Ile Ile Lys Glu Lys Ser
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 Ala Leu Leu Thr Pro Gln Ser Gly Ala Tyr Tyr Asp Leu Trp Val Asp
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Asp Ile Glu Lys Val Leu Glu Pro Leu Phe Ser Tyr Trp Asn Ser Thr
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Ile Arg Tyr Pro Leu Asn Glu Asp Ile Leu Thr Asp Ala Pro Asn Ile
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Tyr Asn Arg Glu Glu Arg Gly Ser Arg Ser Tyr Ser Phe Met Ile Arg
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Thr Lys Asn Pro Cys Gly Lys Val Ser Asn Gln Leu Tyr Leu Thr Met
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Lys Asp Tyr Leu Phe Ala Gln Gln Thr Ala Glu Asn Ile Ala Ala Leu
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Leu Ala Pro Gln Ser Gly Phe Tyr Tyr Asp Ile Trp Val Asp Gly Glu
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 Gly Leu Lys Tyr Ser Glu Ser Val Val Val Arg Ile Thr Gly Cys Pro
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 Asn Gly Cys Ala Arg Pro Tyr Met Ala Glu Leu Gly Leu Val Gly Asp
 545 550 555 560
 Gly Pro Asn Ser Tyr Gln Ile Trp Leu Gly Gly Asn His Lys Gln Thr
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Ser Leu Ala Arg Ser Phe Met Asp Arg Val Lys Ile Leu Asp Leu Glu
580 585 590

Lys Val Leu Glu Pro Leu Phe Tyr Tyr Trp Lys Gln Lys Arg Gln Ser
595 600 605

Lys Glu Ser Phe Gly Asp Phe Thr Asn Arg Met Gly Phe Glu Lys Leu
610 615 620

Lys Glu Tyr Ile Glu Lys Trp Glu Gly Pro Val Val Ala Pro Ser Arg
625 630 635 640

His Asn Leu Lys Leu Phe Ala Asp Lys Glu Thr Tyr Glu Ser Met Asp
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 Gly Asp Gly Lys Leu Phe Tyr Gly Val His Val Asp Asn Gly Arg Leu
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 Asp Gln Ala Trp Arg Glu Pro Ile Thr Ala Ala Leu Ala Gln Ala Gly
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 Asn Gly Cys Ala Arg Pro Tyr Met Ala Glu Val Gly Phe Val Gly Asp
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Met	Lys	Tyr	Met	Ile	Asp	Arg	Trp	Gly	Ile	Asp	Arg	Phe	Arg	Ala	Glu	370	375	380
Val	Glu	Lys	Tyr	Tyr	Gly	Lys	Lys	Phe	Glu	Ser	Phe	Arg	Pro	Leu	Pro	385	390	395
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Ala	Arg	Pro	Tyr	Met	Ala	Glu	Leu	Gly	Phe	Val	Gly	Asp	Gly	Pro	Lys	545	550	555
Ser	Tyr	Gln	Ile	Trp	Leu	Gly	Gly	Thr	Pro	Asn	Gln	Ser	Thr	Leu	Ala	565	570	575
Glu	Ser	Phe	Met	Asp	Lys	Val	Lys	Leu	Asp	Asp	Ile	Glu	Lys	Val	Leu	580	585	590
Glu	Pro	Leu	Phe	Thr	Tyr	Trp	Asn	Gly	Thr	Arg	Gln	Glu	Gly	Glu	Ser	595	600	605
Phe	Gly	Ser	Phe	Thr	Asn	Arg	Thr	Gly	Phe	Asp	Lys	Leu	Lys	Glu	Val	610	615	620
Val	Asn	Lys	Trp	Ala	Glu	Ser	Pro	Ser	Ala	Ala						625	630	635

<210> 8
 <211> 693
 <212> PRT
 <213> Nicotiana tabacum

<400> 8

Met Thr Thr Ser Phe Gly Ala Ala Ile Asn Ile Ala Val Ala Asp Asp
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Pro Asn Pro Lys Leu Gln Ile His Asn Phe Ser Gly Leu Lys Ser Thr
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Ser Asn Ser Leu Leu Leu Ser Arg Arg Leu His Val Phe Gln Ser Phe
35 40 45
Ser Pro Ser Asn Pro Ser Ser Ile Val Arg Ala Val Ser Thr Pro Ala
50 55 60
Lys Pro Ala Ala Val Glu Pro Lys Arg Ser Lys Val Glu Ile Phe Lys
65 70 75 80
Glu Gln Ser Asn Phe Ile Arg Tyr Pro Leu Asn Glu Glu Ile Leu Asn
85 90 95
Asp Ala Pro Asn Ile Asn Glu Ala Ala Thr Gln Leu Ile Lys Phe His
100 105 110
Gly Ser Tyr Met Gln Tyr Asp Arg Asp Glu Arg Gly Gly Arg Ser Tyr
115 120 125
Ser Phe Met Leu Arg Thr Lys Asn Pro Gly Gly Glu Val Pro Asn Arg
130 135 140
Leu Tyr Leu Val Met Asp Asp Leu Ala Asp Gln Phe Gly Ile Gly Thr
145 150 155 160
Leu Arg Leu Thr Thr Arg Gln Thr Phe Gln Leu His Gly Val Leu Lys
165 170 175
Lys Asn Leu Lys Thr Val Met Ser Thr Ile Ile Lys Asn Met Gly Ser
180 185 190
Thr Leu Gly Ala Cys Gly Asp Leu Asn Arg Asn Val Leu Ala Pro Ala
195 200 205
Ala Pro Phe Ala Lys Lys Asp Tyr Met Phe Ala Lys Gln Thr Ala Asp
210 215 220
Asn Ile Ala Ala Leu Leu Thr Pro Gln Ser Gly Phe Tyr Tyr Asp Val
225 230 235 240
Trp Val Asp Gly Glu Lys Val Met Thr Ala Glu Pro Pro Glu Val Val
245 250 255
Lys Ala Arg Asn Asp Asn Ser His Gly Thr Asn Phe Pro Asp Ser Pro
260 265 270
Glu Pro Ile Tyr Gly Thr Gln Phe Leu Pro Arg Lys Phe Lys Ile Ala
275 280 285
Val Thr Val Pro Thr Asp Asn Ser Val Asp Ile Phe Thr Asn Asp Ile
290 295 300
Gly Val Val Val Val Ser Asn Glu Asp Gly Glu Pro Gln Gly Phe Asn
305 310 315 320

Ile	Tyr	Val	Gly	Gly	Gly	Met	Gly	Arg	Thr	His	Arg	Met	Glu	Thr	Thr	
				325					330					335		
Phe	Pro	Arg	Leu	Ala	Glu	Pro	Leu	Gly	Tyr	Val	Pro	Lys	Glu	Asp	Ile	
			340					345					350			
Leu	Tyr	Ala	Val	Lys	Ala	Ile	Val	Val	Thr	Gln	Arg	Glu	Asn	Gly	Arg	
		355					360					365				
Arg	Asp	Asp	Arg	Arg	Tyr	Ser	Arg	Leu	Lys	Tyr	Leu	Leu	Ser	Ser	Trp	
	370					375					380					
Gly	Ile	Glu	Lys	Phe	Arg	Ser	Val	Thr	Glu	Gln	Tyr	Tyr	Gly	Lys	Lys	
385					390					395					400	
Phe	Gln	Pro	Cys	Arg	Glu	Leu	Pro	Glu	Trp	Glu	Phe	Lys	Ser	Tyr	Leu	
				405					410					415		
Gly	Trp	His	Glu	Ala	Gly	Asp	Gly	Ser	Leu	Phe	Cys	Gly	Leu	His	Val	
			420					425					430			
Asp	Asn	Gly	Arg	Val	Lys	Gly	Ala	Met	Lys	Lys	Ala	Leu	Arg	Glu	Val	
		435					440					445				
Ile	Glu	Lys	Tyr	Asn	Leu	Asn	Val	Arg	Leu	Thr	Pro	Asn	Gln	Asn	Ile	
	450					455					460					
Ile	Leu	Cys	Asn	Ile	Arg	Gln	Ala	Trp	Lys	Arg	Pro	Ile	Thr	Thr	Val	
465					470					475					480	
Leu	Ala	Gln	Gly	Gly	Leu	Leu	Gln	Pro	Arg	Tyr	Val	Asp	Pro	Leu	Asn	
				485					490					495		
Leu	Thr	Ala	Met	Ala	Cys	Pro	Ala	Phe	Pro	Leu	Cys	Pro	Leu	Ala	Ile	
			500					505					510			
Thr	Glu	Ala	Glu	Arg	Gly	Ile	Pro	Asp	Ile	Leu	Lys	Arg	Val	Arg	Ala	
		515					520					525				
Ile	Phe	Glu	Arg	Val	Gly	Leu	Lys	Tyr	Ser	Glu	Ser	Val	Val	Ile	Arg	
	530					535					540					
Ile	Thr	Gly	Cys	Pro	Asn	Gly	Cys	Ala	Arg	Pro	Tyr	Met	Ala	Glu	Leu	
545					550					555					560	
Gly	Leu	Val	Gly	Asp	Gly	Pro	Asn	Ser	Tyr	Gln	Ile	Trp	Leu	Gly	Gly	
				565					570					575		
Thr	Pro	Asn	Gln	Thr	Ser	Leu	Ala	Lys	Thr	Phe	Lys	Asp	Lys	Leu	Lys	
			580					585					590			
Val	Gln	Asp	Leu	Glu	Lys	Val	Leu	Glu	Pro	Leu	Phe	Phe	His	Trp	Arg	
		595					600					605				
Arg	Lys	Arg	Gln	Ser	Lys	Glu	Ser	Phe	Gly	Asp	Phe	Thr	Asn	Arg	Met	
	610					615					620					
Gly	Phe	Glu	Lys	Leu	Gly	Glu	Phe	Val	Glu	Lys	Trp	Glu	Gly	Ile	Pro	
625					630					635					640	

Glu	Ser	Ser	Ser	Arg	Tyr	Asn	Leu	Lys	Leu	Phe	Ala	Asp	Arg	Glu	Thr
				645					650					655	
Tyr	Glu	Ala	Met	Asp	Ala	Leu	Ala	Ser	Ile	Gln	Asp	Lys	Asn	Ala	His
			660					665					670		
Gln	Leu	Ala	Ile	Glu	Val	Val	Arg	Asn	Tyr	Val	Ala	Ser	Gln	Gln	Asn
		675					680					685			
Gly	Lys	Ser	Met	Asp											
	690														